

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A device comprising:
a first mechanical torsional resonator; and
a second mechanical torsional resonator electrostatically coupled to the first mechanical resonator wherein the electrostatic coupling is controlled by a voltage.
2. (Original) The device of claim 1 wherein the device acts as a frequency selective filter, a frequency converter or an amplifier.
3. (Original) The device of claim 1 wherein the device acts as a detector of applied force or a detector of mass collected on one of the resonators.
4. (Original) The device of claim 1 wherein the first and second resonators comprise oxide buried beneath single crystal silicon.
5. (Original) The device of claim 4 wherein the first and second resonators are approximately 1 um thick.
6. (Original) The device of claim 4 wherein the first and second resonators comprise paddles having wirebonded contact wires coupled thereto.
7. (Currently Amended) The device of claim 1 wherein the first and second resonators are~~comprise torsional resonators~~ positioned in close proximity.
8. (Original) The device of claim 7 wherein the torsional resonators comprise paddles suspended by narrow beams.

9. (Previously Presented) The device of claim 1 and further comprising:
a laser positioned to project light onto at least one of the mechanical resonators; and
a photo receiver positioned to receive light reflected from the at least one of the
mechanical resonators.
10. (Cancelled) The device of claim 9 wherein the mechanical resonators are selected from
the group consisting of cantilevers, double-supported beams, drum-like membranes, torsional
and translational resonators.
11. (Previously Presented) The device of claim 9 wherein the device provides amplification
of signals in cell phones, from magnetic force imaging apparatus, satellite communication, radars
and radios.
12. (Previously Presented) The device of claim 9 wherein the device comprises a portion of
a device selected from the group consisting of chemical sensors, magnetic sensors, electric field
sensors, light sensors, atomic force microscopes, and thermal sensors.
13. (Original) The device of claim 1 and further comprising means for sensing motion of a
resonator.
14. (Original) The device of claim 13 wherein the means for sensing motion of a resonator
senses such motion by detecting changes in capacitance.
15. (Allowed) A mechanical device comprising:
a first mechanical resonator having a first resonant frequency;
an input signal applied to the first resonator about the first resonant frequency;
a second mechanical resonator electrostatically coupled to the first mechanical resonator,
wherein the second mechanical resonator has a second resonant frequency; and

a pump, coupled to the second mechanical resonator for providing a signal based on the sum of the input signal and a second signal close to the second resonant frequency.

16. (Allowed) The device of claim 15 and further comprising an optical detector that generates a signal representative of oscillation of the first resonator.
17. (Allowed) The device of claim 16 and further comprising:
 - a laser positioned to project light onto at least one of the mechanical resonators; and
 - a photo receiver positioned to receive light reflected from the at least one of the mechanical resonators.
18. (Allowed) A method of processing an AC input signal, the method comprising:
 - applying the input signal to a first mechanical resonator;
 - applying the input signal and a second signal to a second mechanical resonator that is electrostatically coupled to the first mechanical resonator; and
 - measuring movement of the first mechanical resonator.
19. (Allowed) The method of claim 18, wherein the second signal is approximately equal to a resonant frequency of the second mechanical resonator.
20. (Allowed) The method of claim 18 and further comprising sweeping the second signal about the resonant frequency of the second mechanical resonator to find a desired frequency for the second signal.
21. (Allowed) The method of claim 18 and further comprising modifying a resonator bias voltage.
22. (Allowed) The method of claim 18 and further comprising modifying a mechanical resonator to change its resonant frequency.

23. (Currently Amended) A device comprising:
a first moveable mass;
a second moveable mass electrostatically coupled to the first moveable mass; and
a pump that modifies electrostatic interactions between the first and second moveable masses, wherein the first and second moveable masses comprise torsional resonators.
24. (Previously Presented) The device of claim 23 wherein the first and second moveable masses oscillate.
25. (Previously Presented) The device of claim 24 wherein the oscillation of the first and second moveable masses is parametric.
26. (Previously Presented) The device of claim 1 wherein the voltage comprises a voltage difference applied across the first and second mechanical resonators.
27. (New) The device of claim 15 wherein the mechanical resonators are selected from the group consisting of cantilevers, double-supported beams, drum-like membranes, torsional and translational resonators.

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on July 17, 2003, and the references cited therewith.

Claims 1, 7 and 23 are amended. Claim 10 has been cancelled. Claim 27 has been added. As a result, claims 1-9 and 11-27 are now pending in this application.

§102 Rejection of the Claims

Claims 1-3, 13, 14 and 23-26 were rejected under 35 USC § 102(b) as being anticipated by Zakaria, Nguyn or Lin for the specific reasons set forth in the previous office action (3-6-03). The amendment of claim 1, 7 and 23 are believed to overcome this rejection. Independent claims 1 and 23 now refer to torsional resonators, as did claim 7, which was allowable but dependent on a rejected claim. While Applicant believes the original claims clearly distinguish the references, the claims were amended to obtain a quick allowance. The remaining claims that were already allowed were not changed, and the amendment to the claims is not believed to affect the scope of such claims in any manner. Claim 27 was added to make it clear that many types of resonators, other than torsional resonators may be utilized in such claims. The limitation to torsional resonators should not be read into any claim where it does not expressly occur.

§103 Rejection of the Claims

Claims 4-6 were rejected under 35 USC § 103(a) as being unpatentable over Zakaria, Nguyn or Lin for the specific reasons noted in the previous office action. The allowability of claim 1, from which 4-6 depend renders this rejection moot.

Allowable Subject Matter

Claims 7-12 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 15-22 are allowed.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6972 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By



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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 18th day of September, 2003

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